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IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF	:
NARUTOSHI FUKUZAWA	: EXAMINER: MUHAMMED, A.S.
SERIAL NO: 10/657,244	:
FILED: SEPTEMBER 9, 2003	: GROUP ART UNIT: 2627
RCE FILED: OCTOBER 12, 2007	
FOR: OPTICAL RECORDING MEDIUM AND OPTICAL RECORDING/ REPRODUCING METHOD	:

APPEAL BRIEF

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

This is an appeal of the Rejection dated November 26, 2007 of twice-rejected Claims 1-3 and 5-12. A Notice of Appeal was timely filed on February 26, 2008.

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is TDK Corporation having an address 1-13-1, Nihonbashi, Chuo-ku, Tokyo, Japan, 103-8272.

II. RELATED APPEALS AND INTERFERENCES

Appellant, Appellant's legal representative and the assignee are aware of no appeals, interferences, or judicial proceedings which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF THE CLAIMS

Claims 1-3 and 5-12 stand rejected and are herein appealed. Claim 4 has been canceled.

IV. STATUS OF THE AMENDMENTS

No amendment under 37 CFR 1.116 has been filed.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

A summary of the claimed subject matter, as claimed in independent Claims 1 and 7, is mapped out below, with reference to page and line numbers in the specification added in **[bold]** after each element.

Claim 1 is drawn to an optical recording medium comprising at least: **[page 6, lines 7-8]**

a supporting substrate; **[page 6, lines 8-9]**

a recording layer on the supporting substrate, the recording layer comprising at least one **[page 23, lines 1-2]** organic compound as a major component; **[page 6, lines 9-11]**

a dielectric layer on the recording layer; **[page 8, lines 12-15]** and

a light-transmitting layer on the dielectric layer **[page 8, lines 14-15]**, the light-transmitting layer having a thickness of 1 to 150 μm **[page 8, last paragraph]** and being capable of transmitting laser light with a wavelength of 390 to 420 nm for recording and reproducing information, **[page 6, lines 12-15]**

wherein the at least one organic compound in the recording layer includes at least one monomethine cyanine dye that has the minimum value n_{min} of its refractive index n (real part of the complex refractive index) within the range of 370 to 425 nm and has a refractive index n of 1.2 or lower with respect to the wavelength of the recording/reproducing laser light, and the organic compound, when absorbing the laser light, melts or degrades to bring about a change in the refractive index, thereby effecting recording of the information, **[page 6, lines 15-24]** and

wherein the monomethine cyanine dye contains a monomethine group with two nitrogen-containing heterocyclic rings positioned on ends of the monomethine group, **[page 7, lines 13-16]** said two nitrogen-containing heterocyclic rings being selected from the group consisting of a combination of indolenine and indolenine, a combination of benzothiazole and benzothiazole, and a combination of benzothiazole and quinoline. **[page 7, lines 16-20 and 23, compounds AA-1, CC-1 and BC-1]**

Claim 7 is drawn to an optical recording/reproducing method, comprising: **[page 9, lines 1-3]**

providing an optical recording medium comprising at least a supporting substrate; **[page 9, lines 4-5]** a recording layer on the supporting substrate, **[page 9, lines 5-6]** the recording layer comprising at least one **[page 23, lines 1-2]** organic compound as a major

component; **[page 9, lines 6-7]** a dielectric layer on the recording layer; **[page 8, lines 12-15]** and a light-transmitting layer on the dielectric layer, **[page 8, lines 14-15]** the light-transmitting layer having a thickness of 1 to 150 μm **[page 8, last paragraph]** and being capable of transmitting laser light with a wavelength of 390 to 420 nm for recording and reproducing information, **[page 9, lines 8-11]** wherein the at least one organic compound in the recording layer includes at least one monomethine cyanine dye that has the minimum value n_{min} of its refractive index n (real part of the complex refractive index) within the range of 370 to 425 nm and has a refractive index n of 1.2 or lower with respect to the wavelength of the recording/reproducing laser light, and the organic compound, when absorbing the laser light, melts or degrades to bring about a change in the refractive index, **[page 9, lines 11-19]** and wherein the monomethine cyanine dye contains a monomethine group with two nitrogen-containing heterocyclic rings positioned on ends of the monomethine group, **[page 7, lines 13-16]** said two nitrogen-containing heterocyclic rings being selected from the group consisting of a combination of indolenine and indolenine, a combination of benzothiazole and benzothiazole, and a combination of benzothiazole and quinoline; **[page 7, lines 16-20 and 23, compounds AA-1, CC-1 and BC-1]**

irradiating a recording laser light of 390 to 420 nm onto the optical recording medium from the light-transmitting layer side thereof to effect recording of the information, whereupon the refractive index n of the at least one organic compound with respect to the wavelength of reproducing laser light of 390 to 420 nm is raised in the area irradiated with the recording laser light; **[paragraph bridging pages 9 and 10]** and

subsequent to the recording step, irradiating the reproducing laser light of 390 to 420 nm onto the optical recording medium from the light-transmitting layer side thereof to effect reproducing of the information. **[page 10, lines 2-4]**

VI. GROUNDS OF REJECTION

Ground (A)

Claims 1-3, 5, 7-9 and 11-12 stand rejected under 35 U.S.C. § 103(a) as unpatentable over US 6,683,188 (Kasada et al), relying on the PCT publication date of June 21, 2001, in view of EP 1,103,962 (Sabi et al).

Ground (B)

Claims 6 and 10 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kasada et al in view of Sabi et al, further in view of US 5,326,679 (Yanagisawa et al).

VII. ARGUMENT

Ground (A)

Claims 1-3, 5, 7-9 and 11-12 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kasada et al in view of Sabi et al. That rejection is untenable and should not be sustained.

Kasada et al discloses monomethine cyanine dyes represented by the Formula 1:

ϕ-CH=ϕ2, wherein ϕ1 and ϕ2 are the same or different heterocyclic groups represented by any one of Formulae 2 to 8 as described therein (paragraph bridging columns 2 and 3). The monomethine cyanine dyes are described as having an absorption maximum in

a relatively short-wavelength visible region and which substantially absorbs visible light in such a visible region (column 2, lines 13-23), which monomethine cyanine dyes are thus useful in optical recording media (paragraph bridging columns 4 and 5).

The monomethine cyanine dyes of Kasada et al are considerably broader than the monomethine cyanine dyes of the present claims. In order to select a dye containing indolenine rings at each end, one skilled in the art would have to choose Formula 5 for both $\phi 1$ and $\phi 2$, and choose benzene for Z, since Z may be a mono or polycyclic aromatic ring or heterocycle such as benzene, naphthalene, pyridine, quinoline, naphthylidine or quinoxaline, which may have one or more substituents (column 3, lines 38-41). Similarly, to select a corresponding dye having benzothiazole rings at each end, one skilled in the art would have to select Formula 3 and again choose Z as benzene, wherein Z has the above-discussed definition. One skilled in the art could not select a dye having a benzothiazole and quinoline ring at each end, respectively, because quinoline is not covered by any of Kasada et al's Formulae 2-8. In addition, among the 48 compounds specifically listed by Kasada et al, **none** have indolenine rings at each end, and **none** have benzothiazole rings at each end.
To arrive at the presently-recited monomethine cyanine dyes from the much broader disclosure of Kasada et al would be like finding a needle in a haystack. Indeed, Kasada et al does not present a *prima facie* case of obviousness. Compare *In re Baird*, 16 F.3d 380, 29 USPQ2d 1550 (Fed. Cir. 1994).

Nor does Kasada et al disclose or suggest that their monomethine cyanine dyes have a minimum value n_{min} of their refractive index n (real part of the complex refractive index) within the range of 370 to 425 nm and have a refractive index n of 1.2 or lower with respect to the wavelength of the recording/reproducing laser light, as required by the present claims.

Sabi et al has been relied on for a disclosure of dielectric layers. However, even if such dielectric layers were added to the optical recording medium of Kasada et al, the fundamental deficiencies of Kasada et al would not be overcome.

Claims 11 and 12

Claims 11 and 12 are separately patentable, which claims recite specific monomethine cyanine dyes that are even farther away, compared to the dyes recited in the other claims, from the broad disclosure of Kasada et al.

For all the above reasons, it is respectfully requested that this rejection be REVERSED.

Ground (B)

Claims 6 and 10 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kasada et al in view of Sabi et al, further in view of Yanagisawa et al. That rejection is untenable and should not be sustained.

Yanagisawa et al has been relied on for a disclosure of quenchers. But even if a quencher were added to the optical recording medium of Kasada et al modified by Sabi et al, again the fundamental deficiencies of Kasada et al would not be overcome.

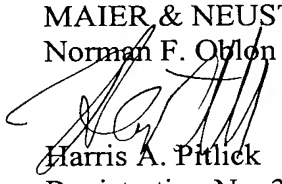
For all the above reasons, it is respectfully requested that this rejection be REVERSED.

VIII. CONCLUSION

For the above reasons, it is respectfully requested that all the rejections still pending in the Rejection be REVERSED.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon



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CLAIMS APPENDIX

1. An optical recording medium comprising at least:

a supporting substrate;

a recording layer on the supporting substrate, the recording layer comprising at least one organic compound as a major component;

a dielectric layer on the recording layer; and

a light-transmitting layer on the dielectric layer, the light-transmitting layer having a thickness of 1 to 150 μm and being capable of transmitting laser light with a wavelength of 390 to 420 nm for recording and reproducing information,

wherein the at least one organic compound in the recording layer includes at least one monomethine cyanine dye that has the minimum value n_{min} of its refractive index n (real part of the complex refractive index) within the range of 370 to 425 nm and has a refractive index n of 1.2 or lower with respect to the wavelength of the recording/reproducing laser light, and the organic compound, when absorbing the laser light, melts or degrades to bring about a change in the refractive index, thereby effecting recording of the information, and

wherein the monomethine cyanine dye contains a monomethine group with two nitrogen-containing heterocyclic rings positioned on ends of the monomethine group, said two nitrogen-containing heterocyclic rings being selected from the group consisting of a combination of indolenine and indolenine, a combination of benzothiazole and benzothiazole, and a combination of benzothiazole and quinoline.

2. The optical recording medium according to claim 1, wherein, at the wavelength of the reproducing laser light, the melting or the degradation of the organic compound causes an increase in the refractive index n of the organic compound.

3. The optical recording medium according to claim 1, wherein the organic compound has an extinction coefficient k (imaginary part of the complex refractive index) of 0.15 or above, with respect to both the wavelength of the recording laser light and the wavelength of the reproducing laser light.

5. The optical recording medium according to claim 1, wherein the monomethine cyanine dye contains a monomethine group with two nitrogen-containing heterocyclic rings positioned on ends of the monomethine group, the two nitrogen-containing heterocyclic rings being identical to one another.

6. The optical recording medium according to claim 1, wherein the recording layer further comprises a quencher.

7. An optical recording/reproducing method, comprising:

providing an optical recording medium comprising at least a supporting substrate; a recording layer on the supporting substrate, the recording layer comprising at least one organic compound as a major component; a dielectric layer on the recording layer; and a light-transmitting layer on the dielectric layer, the light-transmitting layer having a thickness of 1 to 150 μm and being capable of transmitting laser light with a wavelength of 390 to 420 nm for recording and reproducing information, wherein the at least one organic compound in the recording layer includes at least one monomethine cyanine dye that has the minimum value n_{min} of its refractive index n (real part of the complex refractive index) within the range of 370 to 425 nm and has a refractive index n of 1.2 or lower with respect to the wavelength of the recording/reproducing laser light, and the organic compound, when absorbing the laser light, melts or degrades to bring about a change in the refractive index, and wherein the

monomethine cyanine dye contains a monomethine group with two nitrogen-containing heterocyclic rings positioned on ends of the monomethine group, said two nitrogen-containing heterocyclic rings being selected from the group consisting of a combination of indolenine and indolenine, a combination of benzothiazole and benzothiazole, and a combination of benzothiazole and quinoline;

irradiating a recording laser light of 390 to 420 nm onto the optical recording medium from the light-transmitting layer side thereof to effect recording of the information, whereupon the refractive index n of the at least one organic compound with respect to the wavelength of reproducing laser light of 390 to 420 nm is raised in the area irradiated with the recording laser light; and

subsequent to the recording step, irradiating the reproducing laser light of 390 to 420 nm onto the optical recording medium from the light-transmitting layer side thereof to effect reproducing of the information.

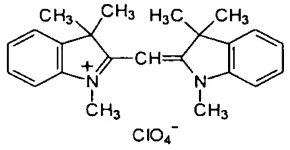
8. The method according to claim 7, wherein the organic compound has an extinction coefficient k (imaginary part of the complex refractive index) of 0.15 or above, with respect to both the wavelength of the recording laser light and the wavelength of the reproducing laser light.

9. The method according to claim 7, wherein the monomethine cyanine dye contains a monomethine group with two nitrogen-containing heterocyclic rings positioned on ends of the monomethine group, the two nitrogen-containing heterocyclic rings being identical to one another.

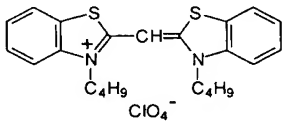
10. The method according to claim 7, wherein the recording layer further comprises a quencher.

11. The optical recording medium according to claim 1, wherein the at least one organic compound in the recording layer includes at least one of the following monomethine cyanine dyes:

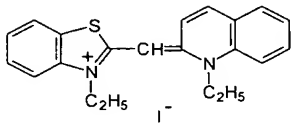
AA-1



CC-1



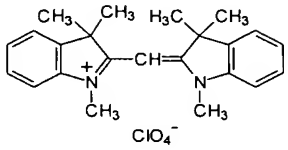
BC-1



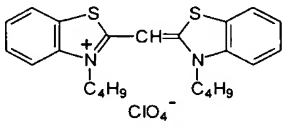
12. The method according to claim 7, wherein the at least one organic compound in the recording layer includes at least one of the following monomethine

cyanine dyes:

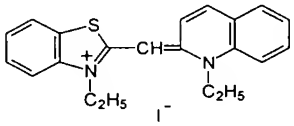
AA-1



CC-1



BC-1



EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.